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Pesticide Fact Sheet Number 99: Propargite

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This document contains up-to-date chemical information, including a summary of the Agency's regulatory position and rationale, on a specific pesticide or group of pesticides. A Fact Sheet is issued after one of the following actions has occurred.

1. Issuance or reissuance of a registration standard,
2. Issuance of each special review document,
3. Registration of a significantly changed use pattern,
4. Registration of a new chemical, or
5. An immediate need for information to resolve controversial issues relating to a specific chemical or use pattern.

17. Document Analysis a. Descriptors

Pesticides, regulations, Chemical Information Fact Sheet, Use Patterns, Science Findings

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

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EPA

Pesticide Fact Sheet

Name of Chemical: PROPARGITE
Reason for Issuance: REGISTRATION STANDARD
Date Issued: SEPTEMBER 30, 1986
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1. DESCRIPTION OF CHEMICAL

Generic Name:	2-(p-tert-butylphenoxy)cyclohexyl 2-propynyl sulfite
Common Name:	Propargite
Trade Names:	Omite®, Comite® and Uniroyal D014
EPA Shaughnessy Code:	097601
Chemical Abstracts Service (CAS) Number:	2312-35-8
Pesticide Type:	Acaricide
Year of Initial Registration:	1966
Chemical Family:	Organosulfite
U.S. Producer:	Uniroyal Chemical Company

2. USE PATTERNS AND FORMULATION

Application Sites: Terrestrial food crops (field, vegetable, and orchard crops); terrestrial nonfood crops (ornamentals), aquatic food crop (cranberry); and greenhouse nonfood crops (ornamentals).

Types of Formulations: Single active ingredient (a.i.) formulations consist of 4% dust; 3% and 30% wettable powders; 5, 6 and 6.55 pounds per gallon emulsifiable concentrates; The technical formulation is 85% a.i., and the formulation intermediate is 25% a.i.

Types and Methods of Application: End-use product is applied foliarly using air and/or ground equipment (including air blast).

Application Rates: Application rate ranges from 0.75 to 6.75 lb active ingredient per acre.

Usual Carrier: Water

3. SCIENCE FINDINGS

Summary Science Statement: Propargite is not considered at this time to be oncogenic. Propargite has a low acute (Category III) oral, dermal, inhalation toxicity. It is in toxicity category I however, for primary eye and primary skin irritation, and cases of severe dermatitis afflicting workers reentering treated sites have been reported. Chronic testing reveals that propargite appears to have little effect on laboratory animals except at higher dosage levels; effects reported include depressed body weights and rates of weight gain. Oral subchronic test results appear to parallel those for chronic testing. Propargite is not teratogenic in rabbits and rats. Insufficient data exist to fully assess the dermal sensitization, subchronic dermal toxicity, subchronic inhalation toxicity, and mutagenicity of propargite. Additional metabolism testing is also necessary. Propargite is relatively nontoxic to honey bees and avian species. It is very highly toxic to freshwater fish. The actual threat to aquatic organisms at this time cannot be accurately assessed due to the insufficiency of environmental fate data. Field monitoring data to determine propargite residues in water from terrestrial applications is needed as is additional testing to determine the effects of end-use products on coldwater and warmwater species of fish, aquatic invertebrates, and estuarine and marine organisms. The metabolism of propargite in both plants and animals is not sufficiently understood; additional metabolism data are necessary. Storage stability data are also necessary, as well as additional crop residue data and processing studies for certain crops registered for propargite use.

CHEMICAL CHARACTERISTICS

Physical State:	Viscous liquid.
Color:	Dark amber
Odor:	Faint solvent odor to very faint solvent odor.
Density:	Specific gravity = 1.085 - 1.115 at 25°C; Bulk density = 40.92 lb/ft.

Solubility:	In water, about 0.5 ppm at 25°C, miscible with organic solvents such as acetone, benzene, and ethanol.
Stability:	No evidence of breakdown in one year.
Flash Point:	At least 38.5°C

TOXICOLOGICAL CHARACTERISTICS

Acute Effects

Adequate data are not available to fully assess the toxicity of Propargite. While, in general, propargite is not highly toxic (Category III oral, dermal and inhalation), it is in toxicity Category I for primary eye and skin irritation. Available data present only supplementary information (as set forth below), and additional data must be submitted.

Acute Oral Toxicity (Rat):	2.2 g/kg
Acute Dermal Toxicity (Rabbit):	3.16(1.63-6.15) ml/kg
Acute Inhalation:	> 2.5 mg/l
Primary Eye Irritation:	Corneal effects that were not reversible after 14 days were observed in four of six rabbits.
Dermal Sensitization:	Inconclusive
Subchronic Dermal Toxicity:	Inconclusive

Chronic Effects

Teratogenicity (Rabbit):	Maternal NOEL = 2 mg/kg/day Maternal LEL = 6 mg/kg/day (reduced body weight gain) Developmental Toxicity NOEL= 2 mg/kg/day; Developmental (increased resorption, reduced body weight, and delayed ossification). A/D ratio = maternal LEL/Developmental = 2/2 = 1
3-Gen. Reproduction (Rat):	NOEL > 300 ppm. Additional data is required. Only one dose used throughout the study.

Mutagenicity:	Inconclusive. Additional categories of mutagenicity testing are required.
Chronic Feeding/ Oncogenicity (Dog):	NOEL = 900 ppm (HDT). No adverse effects were observed by the hematology, blood chemistry determinations or urine examinations.
Feeding/Oncogenicity:	Inconclusive. The study is classified as Supplementary because too few animals were examined histologically at 900 and 2000 ppm. This study needs to be repeated.
Metabolism:	Inconclusive. Additional data is required.

OTHER TOXICOLOGICAL EFFECTS

Propargite is not an organophosphate chemical; therefore, it does not have a neurotoxic potential, and a neurotoxicity study is not required.

MAJOR ROUTES OF EXPOSURE

There is a potential for dermal, ocular and inhalation exposure from mixing concentrates and applying spray mixtures.

PHYSIOLOGICAL AND BIOCHEMICAL BEHAVIOR CHARACTERISTICS

Foliar Absorption:	Data are not available to evaluate the effects of propargite in plants.
Translocation:	Data are not available to evaluate the translocation in plants.
Mechanism of Pesticidal Actions:	Mode of activity involves residual killing action

ENVIRONMENTAL CHARACTERISTICS

Available data are insufficient to fully assess the environmental fate of propargite. From the data that exists, however, there seems to be no reason for concern about the leaching of the parent chemical into groundwater.

ECOLOGICAL CHARACTERISTICS

Avian Oral Toxicity:	Mallard duck - > 4640 ppm
Avian Dietary Toxicity:	Bobwhite quail 3401 ppm Mallard duck - > 4640 ppm
Avian Reproduction:	Data are inconclusive to determine the effects on avian reproduction. Additional data are required.
Freshwater Fish Toxicity:	Bluegill Sunfish - 0.167 ppm Rainbow trout - 0.118 ppm
Aquatic Invertebrates (freshwater):	Daphnia magna - 0.092 ppm
Aquatic Invertebrates (lifecycle):	Daphia magna - 0.009 - 0.014 ppm

Available data indicate that propargite is practically nontoxic to avian species. Propargite is highly toxic to fish.

TOLERANCE ASSESSMENT

Tolerances have been established for residues of propargite in raw agricultural commodities, milk, eggs, meat, fat and meat by-products (40 CFR 180.259).

Commodity	Parts Per Million (ppm)
Almonds	0.1
Almonds, hulls	55.0
Apples	3.0
Apricots	7.0
Beans, dry	0.2
Beans, succulent	20.0
Cattle, fat	0.1
Cattle, MBYP	0.1
Cattle, meat	0.1
Corn, fodder	10.0
Corn, forage	10.0
Corn, fresh (incl. sweet) (K+CWHR)	0.1
Corn, grain	0.1
Cottonseed	0.1
Cranberries	10.1
Eggs	0.1
Figs (fresh)	3.0

Commodity	Parts Per Million (ppm)
Goats, fats	0.1
Goats, meat	0.1
Grapefruit	5.0
Grapes	10.0
Hogs, fat	0.1
Hogs, meat	0.1
Hops	15.0
Horses, fat	0.1
Horses, MBYP	0.1
Horses, meat	0.1
Lemons	5.0
Milkfat (0.08 in whole milk)	2.0
Mint	50.0
Nectarines	4.0
Oranges	5.0
Peaches	7.0
Peanuts	0.1
Peanuts, forage	10.0
Peanuts, hay	10.0
Peanuts, hulls	10.0
Pears	3.0
Plums (fresh prunes)	7.0
Potatoes	0.1
Poultry, fat	0.1
Poultry, MBYP	0.1
Poultry, meat	0.1
Sheep, fat	0.1
Sheep, MBYP	0.1
Sheep, meat	0.1
Sorghum, fodder	10.0
Sorghum, forage	10.0
Strawberries	7.0
Tea (dry)	10.0
Walnuts	0.1

Results of the Tolerance Assessment: Because chronic feeding/oncogenicity and reproduction studies are needed, the current PADI is set on a 2-year dog feeding study a systemic NOEL at the highest dose tested (900 ppm). At the highest dose tested, there were no effects observed. With a safety factor of 1000, the TMRC is currently 112% of the PADI. The TMRC, however, is based on the assumption that 100% of the crop for which a tolerance is established is treated with propargite, which is not the case. If the TMRC is adjusted to reflect the actual percentage of crop treated, the TMRC would be reduced to a percentage level of the PADI significantly lower than 112%. Therefore, the public should be in no danger from dietary exposure while the Agency awaits data.

SUMMARY OF REGULATORY POSITIONS AND RATIONALES

The following are warning statements that must be included on propargite pesticide labels.

MANUFACTURING USE PRODUCTS

Under the Environmental Hazard Statement, add the following precaution:

"This pesticide is toxic to fish. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or public water unless this product is specifically identified and addressed in an NPDES permit. Do not discharge effluent containing this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA."

Protective Clothing Statement

"Mixer/loaders must wear goggles or a face shield, chemical-resistant apron, long-sleeved shirt and long pants or coveralls, and mid-forearm to elbow length chemical-resistant gloves when mixing, loading, or otherwise handling the concentrate."

END-USE PRODUCTS

Products with Aquatic Use(s): Under the Environmental Hazard Statement, add the following precaution:

"This pesticide is toxic to fish. Do not apply directly to water except as specified on this label. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water by cleaning of equipment or disposal of wastes."

Products with Terrestrial Use(s): Under the Environmental Hazard Statement, add the following precaution:

"This pesticide is toxic to fish. Do not apply directly to water or wetlands (swamps, bogs, marshes, and potholes). Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water by cleaning of equipment or disposal of wastes."

Reentry Statement (For All Products with Crop Uses)

"Do not allow worker reentry into treated fields within 3 days of application, for strawberries, and within 7 days, for all other agricultural uses of propargite, unless

appropriate protective clothing is worn. Protective clothing means at least a hat or other suitable head covering, a long-sleeved shirt and long-legged trousers or a coverall-type garment (closely woven fabric covering the body, including the arms and legs), chemical-resistant gloves, socks, and shoes."

Crop Rotation Statement

"Do not plant any food or feed crop in rotation within 6 months after last application of propargite unless the crop is a registered use for propargite."

Irrigated Crops Statement

"Do not use water leaving propargite treated fields to irrigate crops used for food or feed that are not registered for use with propargite."

Protective Clothing Statement

"Mixer/loaders must wear goggles or a face shield, chemical-resistant apron, long-sleeve shirt, long pants, and mid-forearm to elbow length chemical-resistant gloves. Applicators must wear a long-sleeve shirt and long pants, and chemical-resistant gloves while applying this pesticide. Applicators must also wear a wide-brimmed hat during upward directed spraying.

Any article of clothing worn while applying product must be cleaned before re-use. Clothing should be laundered separately from household articles. Clothing that has been drenched or has otherwise absorbed concentrated pesticide must be disposed of in a sanitary landfill, incinerated, or burned if allowed by State and local authorities."

Endangered Species Statement (For Products with Use on Terrestrial and Aquatic Food Crops, by February 1988)

"The use of any pesticide in a manner that may kill or otherwise harm an endangered or threatened species or adversely modify their habitat is a violation of Federal laws. The use of this product is controlled to prevent death or harm to endangered or threatened species that occur in the following counties or elsewhere in their range.

Before using this pesticide in the following counties, you must obtain the EPA Cropland Endangered Species Bulletin. The use of this pesticide is prohibited in these counties unless specified otherwise in the Bulletin. The EPA Bulletin is available from either your local pesticide distributor, your County Agricultural Extension Agent, the Endangered

Species Specialist in your State Wildlife Agency Headquarters, or the appropriate Regional Office of the U.S. Fish and Wildlife Service (FWS). THIS BULLETIN MUST BE REVIEWED PRIOR TO PESTICIDE USE."

5. SUMMARY OF MAJOR DATA GAPS

The following list presents data required and the due date for submission of this data:

Product Chemistry	Due Dates
Product Chemistry	Feb 1987
Residue Chemistry	
Plant/Livestock Metabolism	Feb 1988
Plant/Animal Residues	Feb 1988
Storage Stability	Feb 1988
Toxicology	
Sensitization Study	July 1987
Subchronic Dermal Toxicity (21 days)	May 1987
Subchronic Inhalation Toxicity (90 days)	May 1987
Metabolism	Sept 1988
Mutagenicity	Sept 1987
Chronic Feeding/oncogencity	Dec 1990
Two-Gen. Reproduction	Dec 1989
Environmental Fate	
Soil Dissipation (Field)	Dec 1988
Aquatic (Sediment)	Dec 1988
Rotational Crops (Confined)	Dec 1989
Rotational Crops (Field)	Nov 1990
Irrigated Crops	Dec 1989
Fish (Accumulation Studies)	Sept 1987
Hydrolysis/Photodegradation	July 1987
Aerobic Soil Metabolism	Dec 1988
Anaerobic Soil Metabolism	Dec 1988
Anaerobic Aquatic	Dec 1988
Aerobic Aquatic	Dec 1988
Leaching and Adsorption/Desorption	July 1987
Volatility (Lab)	July 1987
Foliar dissipation (Reentry)	Nov 1987
Soil Dissipation (Reentry)	Nov 1987
Glove Permeability	Nov 1987

Summary of major data gaps (continued)

Ecological Effects

Residue Level Monitoring (Aquatic)	Feb 1988
Avian Reproduction	Sept 1988
Freshwater Fish (Warmwater)	July 1987
Freshwater Fish (Coldwater)	July 1987
Acute LC_{50} Freshwater (Invertebrates)	July 1987
Acute LC_{50} Estuarine & Marine Organisms (Shrimps)	July 1987
(Fish)	July 1987
(Mollusk)	July 1987

6. CONTACT PERSON AT EPA

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DISCLAIMER: The information presented in this Pesticide Fact Sheet is for informational purposes only and may not be used to fulfill data requirements for pesticide registration and reregistration.